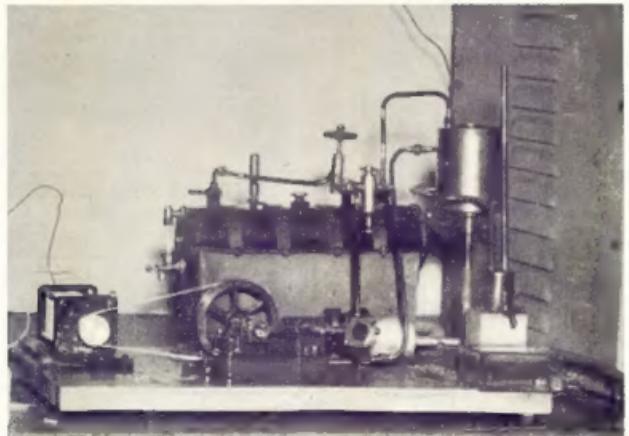


SEPTEMBER, 1961

AMATEUR RADIO
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A STEAM DRIVEN PARAMETRIC AMPLIFIER!



A voltage is applied across a condenser by a series diode, which is then connected through another series diode across another condenser. These two condensers are connected to a common frame, which is shown in the above illustration.

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100 ohm co-ax. cable, ½" diam., 2/- yd.
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WI BROADCASTS

All Amateurs are urged to keep these
frequencies clear during, and for a period
of 15 minutes after, the official Broadcasts.

VK3WI: Sundays, 1100 hours EST, simultaneously on 3575 Kc., 7146 Kc., and 145.0 Mc. Intrastate hook-ups taken on 7050 Kc.

VK4WI: Sundays, 1030 hours EST, simultaneously on 3575 and 7146 Kc., 145.0 and 146.5 Mc. Intrastate hook-ups taken on 7135 Kc. Individual frequency checks of Amateur Stations given when VK3WI is on the air.

VK4WI: Sundays, 0900 hours EST, simultaneously on 7146 Kc. and 14.343 Mc. Intrastate hook-ups taken on 7135 Kc.

VK5WI: Sundays, 0900 hours CAT, on 7146 Kc. Intrastate hook-ups taken on 7125 Kc. Frequency checks given when VK5WI is on the air and also by VK5MD by arrangement.

VK5WI: Sundays at 1000 hours WAST, on 7146 Kc. Intrastate hook-ups taken on 7085 Kc.

VK5WI: Sundays at 1000 hours EST, on 7146 Kc. and 3672 Kc. Intrastate hook-ups taken on 7115 Kc.

AMATEUR RADIO

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

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EDITORIAL

★

AMATEURS AND AUSTRALIA

IT'S a long time since the Amateur physically manufactured the component parts for his equipment from the raw materials for the simple reason that the making of such parts requires processes and machines unaccessible to individual people.

As the science has progressed so the Amateur has of necessity moved further away from manufacture and has contented himself experimenting with the practical application of circuitry using manufactured components.

The science itself has taken giant strides ahead, making it impossible for individuals to participate even in many of the practical applications. Who, for instance, could afford to erect radio telescopes; who could afford to indulge in multiplexing high speed telegraphy equipment; who, out of individual Amateurs, could afford the modern test equipment to carry out the work done in laboratories. None! Unless he (or she) is employed in industry or

Government instrumentalities. And this is where the Amateur of today is of such importance.

In industry, laboratories, broadcasting stations, television stations . . . everywhere in fact that one finds electronics one finds Amateurs and the "employer" derives the benefit of his natural attribute and keenness for his work. In this category falls the defence services and elsewhere in this edition of "Amateur Radio" will be found a story of what the Amateur can do in defence even whilst carrying on his work in other fields.

To say that Amateurs serve no useful purpose is so very false because many of the highest technical posts in the country are held by Amateurs; it is because they were initially Amateurs which encouraged them to study further into the world of electronics—a world which is daily crying out for more and more technical skill.

FEDERAL EXECUTIVE.

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CHANNEL MASTER

Presents two striking new concepts in . . .

AUTOMATIC ROTATOR design

features . . .



- FINER TUNING
- FLEXIBILITY
- FOOL-PROOF CONTROL BOX
- HIGHER TORQUE
- SIMPLE & MORE FUNCTIONAL DESIGN



Completely New Circuit Principle Delivers **MORE POWER . . . PERFORMANCE . . . ACCURACY**

INSTANT STOPPING ACTION

Automatic brake immediately locks the antenna in the exact position you want. Prevents coasting and wind-milling. Brake is released only when motor is energised.

SPUR TYPE GEAR DESIGN

Generates less friction . . . delivers more power to the output shaft.

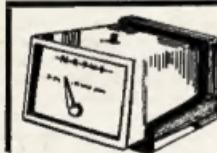
INDIVIDUALLY ADJUSTED IDLER ARM

fits exactly into gear train for optimum gear meshing . . . eliminates back-lash.

PINPOINT ACCURACY

Rotator turns at one r.p.m. through 360 degrees. Antennas are oriented to the optimum position for each channel. Electrical and mechanical stops prevent drift. Stopping and reversing is instantaneous.

FRICITION-FREE, STRAIN-FREE ROLLER BALL THRUST BEARING



MODEL
No. 9522
COMPASS
ROTATOR

Has same mast head rotator unit as Automatic 9524. Manually operated finger tip bar control switch permits easy and positive setting and stopping of antenna for best pix quality. Compass dial indicator shows direction of antenna through 360 degrees rotation.

Additional on/off switch cuts power from transformer primary when rotator is not in use.

PRECISION-MACHINED, HEAVY-DUTY GEARS

Heavy duty brass and steel machine-cut gears set to within .0001 inch. Ball gear is 8 inches in diameter and 3/16 inch wide. Teeth sink in deep—can't strip even in hurricane-force winds. No slip, no back-lash, no binding. Gears have own roller ball thrust bearing.

"AUTOMATIC" ROTATOR

Model No. 9524

Gear ratio: 320:1 to 1. Hefts stationary and rotating mass from $\frac{3}{8}$ to 2 lbs. $4\frac{1}{4}$ " bite on Antenna Mast, $4\frac{1}{4}$ " bite on Support Mast. 240v. A.C. input. Shipping weight 13 lbs. Three-conductor rotor wire. (When four-conductor wire is used, 4th wire is double, 1/4" diameter power line.) 365 degrees rotation in 60 sec. (1 r.p.m.)

WEATHER-PROOF HOUSING

Vinyl umbrella washer and one-piece high strength aluminum casting seals entire drive unit against all outside weather conditions.

ACCESSORIES AVAILABLE

Heavy duty ball bearing guy rings, for extra large stacked arrays. Three- and four-conductor flat ribbon rotator cable.

ALL MOVING PARTS ARE WEATHER RESISTANT

A special lubricant, developed by the U.S. Army, protects the inner workings of the new rotator. It has an extremely low freezing point—minus 70 degrees Fahrenheit and an extremely high melting point—plus 370 degrees Fahrenheit—and is absolutely waterproof.

Feature for Feature . . . the "AUTOMATIC" turns in a class by itself!

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NARROW BAND F.M.

P. A. LOWE,* VK3ZDO

FOR quite a long time the author has regarded f.m. as more desirable than a.m. for local work on the v.h.f. bands. Until recently this view was held on theoretical grounds, but a recent trial has confirmed its practical advantages.

An fm signal may be generated by modulating the oscillator of a conventional c.w. or a.m. transmitter. Fig. 1 shows a simple method of frequency modulating an existing v.o. A junction silicon diode (type 1N1188) is used as a variable capacity device, back bias is not applied from an external source but is presumably derived by rectification of r.f. from the v.o. Audio is obtained from the existing a.m. modulator. Fig. 2 shows the arrangement of the components in the tuning box of the v.o. in the writer's unit.

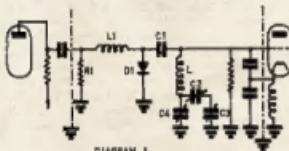


DIAGRAM 1.
C1 5 pF., R1 100K, L1 2.5mH. r.f.c.
R2 1M100K.

In order to maintain the deviation constant it is desirable to apply some sort of a.g.c. to the modulator (e.g. a clipper filter arrangement). If this is not done, when the voice is raised (as in a DX opening) the signal will become rather broad, much to the annoyance of those nearby.

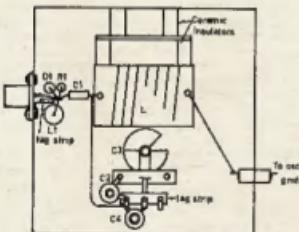


CHART 2.

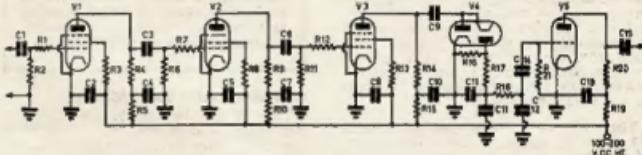
From the receiving angle, f.m. is the only system by which complete amplitude limiting may be obtained without distorting the signal. This means that all a.m. components, including man-made noise, can be removed from the incoming signal. This is a very real advantage in most city and suburban locations. Amplitude limiting such as this will also eliminate fading, as experienced in mobile work on any band, and may even be of advantage in DX work, on 8, 10, 12, 15, 20, 40, 80, and 160 meters.

* Ormond College, University of Melbourne, Parkville, N.Z.

The main problem in f.m. reception is that to realise the full advantages of this system fairly complex demodulating circuitry is required. The unit to be described for this purpose is perhaps a fairly simple answer. This unit was first used in the U.S.A. as a 5 metre receiver to demodulate modulated oscillators. Just after the war the circuit appeared in "QST" for use with a 200 kc. i.f. and it has most recently appeared in June 1960 "QST" for use with an i.f. of 80 kc. The constants in each circuit are almost the same, the variations being minor and apparently of no practical importance.

group is using converted superseded commercial units. Such units may appear on the general market before long. These units are basically for broad-band fm., but have facilities for reducing the deviation. Jim VK3ESW will be active mobile soon and anticipates being on the air every afternoon on his way to and from work; and as he works on Mt. Dandenong he should put out quite a reliable signal.

F.m. also has its advantages on the h.f. bands. Those troubled with particularly obstinate cases of b.c.i. will find that f.m. should produce a satisfactory cure. Most b.c.i. is due to cross-



1980年卷

C1, C3, C5—47 pF.
 C2, C4, C6, C7—3.01 μ F.
 C8—6.1 μ F.
 C9—35 pF.
 C10—0.5 μ F.
 C11, C15—0.002 μ F.
 C12—0.05 μ F.
 C14, C15—0.005 μ F.
 R1, R3, R6, R13—100K ohms.
 R2, R4, R7, R9, R14, R20—15K ohms.
 R5, R10—2.2K ohms.
 R6—33K ohms.
 R11—22K ohms.
 R18—8.2K ohms.

R15—87K ohms.
 R16—47K ohms.
 R17, R18—6.8K ohms.
 R19—1K ohms.
 R21—500K ohms.
 V1, V2, V3—6AK5 or 6ACT.
 V4—6AL5 or 6H6.
 V5—5CA or 5K6.

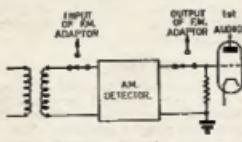
Notes: The suppressor grid of the SAM5 is internally connected. The value of C10 determines the base response of the unit. This being greater when C10 is large.

The circuit is shown in Fig. 3. To insert the unit in the receiver it is necessary to provide an l.f. output, an audio input, and some means of disconnecting the a.m. detector (see Fig. 4).

V1, V2, and V3 are audio limiting, the output from these being square waves, which actuate a pulse counting type detector V4. V5 is an extra audio stage if necessary. At the low h.t. used, the valves recommended for V5 run at zero grid bias.

The acceptable deviation for this unit is governed by the passband of the i.f. strip. If the received signal is too, broad gross distortion results. Limiting may be adjusted with the receiver r.f. gain control and results have been found quite satisfactory in eliminating car noise, electric drills, etc.

Active in Melbourne on 6 metre f.m. are VKs 3BX, 3ZEL and 3ZFS. They are using a net frequency of 50.97 Mc. VK3ZFS also is on 50.32 Mc. This



PICTURE 6.

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The Elizabeth Amateur Radio Club will be operating its Club Station, VK5LZ, at the Elizabeth Birthday Celebrations to be held in November. The station will be on the air from Friday evening, 24th November, until Saturday evening, 25th November.

To make the display more interesting to the public, the Club will be looking for plenty of good contacts on 40 and 80 metres. All Elizabeth Amateurs will be on during the Saturday so if you are interested in obtaining an "Elizabeth Award" a good opportunity will be during that day.

THE ANTENNA MATCH*

Part 1.—General Considerations of a New Aid to Maximum Efficiency in Aerial Matching

F. HICKS-ARNOLD (G6MB)

IT is a fundamental truism that "any given aerial is only as good as the matching between it and the transmitter permit it to be." Unfortunately, this is all too often overlooked and much useful power is wasted on its way to the radiator.

Power transfer from the transmitter to the aerial system is nearly always carried out by the use of some form of transmission line between the output of the transmitter and some convenient feed point along the aerial itself. When the transmission line is correctly terminated to the load presented at either end, and the line itself has the correct characteristic impedance, then, and then only, are the voltage and current uniform throughout its length and r.f. power flows along the line in the form of a travelling wave.

The ratio of voltage (V) to current (I) is the characteristic impedance (Z_0) of the line and is determined by its type of construction. Correct matching and uniform travelling wave occur when the aerial load is equal to Z_0 and the load offered to the transmitter is also Z_0 . If the load at the aerial or end of line remote from the transmitter is of a pure resistive nature and of Z_0 impedance, then it will accept all the power which the line offers. Should this not be so, a second travelling wave will be reflected back from the load to the source of power.

The interaction between the forward travelling or power wave and the reflected backward travelling or loss of power wave results in periodic variations of V and I along the line, referred to as standing waves. The impedance V/I offered to the transmitter now depends on the degree of mismatch and the length of the transmission line, since for every volt offered to the line by the transmitter there is a reflected voltage fed back along the line. The phase angle between the forward and reflected voltages may be of any relative angle depending on the length of the line and may either aid or oppose the transmitter. If the mismatch is severe it may be difficult to load the transmitter correctly, and as the average current in the line is increased, so is power lost by line resistance also increased. If the load presented to the transmission line is of Z_0 impedance and purely resistive, then the phase angle of voltage and current flowing along the line will be zero, and the total power presented to the line will be accepted by the load. Should the load be not purely resistive, but reflect back either capacitive or inductive reactance, then the phase angle will change from zero to a figure depending on the magnitude of the reactance and of a sign determined by whether the reactance is capacitive or inductive.

It is never very easy to be quite sure that a transmitter is delivering maximum power to its radiating system but the instrument to be described in this and the succeeding article enables the necessary measurements to be made quickly and simply. The Antennamatch is one of those devices which, once installed, is likely to leave the user wondering how he ever managed without it. Its construction should be an urgent project amongst all those wishing to employ their transmitting equipment to best advantage.

LOADING THE TRANSMITTER

Thus it can be clearly seen that for maximum transference of power from the transmitter to the aerial two conditions are required: correct impedance and zero phase angle. The ratio between forward and reflected current in a transmission line is called the Reflection Coefficient K and is related to the standing wave ratio by the equation:

$$\text{S.W.R.} = \frac{1 + K}{1 - K}$$

K is always less than unity, since the load cannot reflect more current than it receives, so that for a perfect match K is zero.

If these two conditions are not present, difficulty will be found in loading the transmitter with the correct coupling. How many of us have been guilty of adding another couple of turns to the link coupling to the p.a. tank when it appears that the final will not load to the correct value? Such expediency is unforgivable and quite useless as a method of getting more power into the aerial—it serves only to increase the standing wave ratio on the line and to increase the circulating current, thus further increasing losses by heat and reactance thrown back along the line.

With the ever increasing popularity of the pi-network and its advantages for harmonic reduction, correct matching between the final stage and the aerial becomes even more important. If the load presented is not correct, the Q of the final tank circuit will not be as the designer intended, and efficiency will be reduced. Should there be standing waves on the transmission line, a "low pass filter" inserted in the line cannot work correctly and instead of attenuating the undesired harmonics it may make matters worse.

LOW PASS FILTERS

Many commercially-made low-pass filters have incorporated in them fixed capacitors of comparatively low voltage rating; a correctly terminated low impedance line has a voltage across it

well within the rating of such capacitors, but should the filter be introduced at a point where high voltages exist (due to standing waves caused by incorrect load matching) then there is every likelihood of the capacitors breaking down and destroying the filter. In fact these very points were brought home to the writer when using parallel 807s in a final stage and a pi-network for matching the anode impedance of the 807s to 75 ohms. The low impedance line from the transmitter (75 ohms) to the aerial matching network was terminated by a single turn Faraday screened link. This single turn was made from the same coaxial cable as the line, and was of a rating suitable for 150 watts input to the transmitter. In spite of this the link got so hot that the inner conductor melted its way through the polythene insulant and shorted through to the outer screening. The insertion of an r.f. ammeter in the 75 ohms line showed a current of 8 amps! If all were well and the line correctly terminated, then such a current into 75 ohms would indicate a power of 2.7 kilowatts—rather a lot for two 807s!

It was evident therefore that all was not well and that a bad standing wave existed on the 75 ohm line.

THE PI-NETWORK CIRCUIT

For a pi-network final, conditions for $C1-L-C2$ must be of the correct calculated values for the frequency in use, and the Q value desired in the network. The network has a specific job to do—and that is to give an impedance transformation from that of the anode load impedance, of whatever value is to be used in the final, to some specific impedance required to be presented to the transmission line. This specific output impedance is usually 50, 75 or 100 ohms to suit the characteristic impedance (Z_0) of the transmission line to be used. Only when these exact values and conditions are observed can the impedance presented to the line be correct. All possible variations of these values should be eliminated. In practice, the use of a large variable capacitor for $C2$ should be avoided, especially if L is also made variable. For ease of band switching $C2$ should be a fixed value as calculated for conditions required, and L either tapped and switched or made variable.

Theoretically, it can be shown that for any given set of conditions the values of $C1-L-C2$ are fixed and of one value only and can be made so in the transmitter; in practice, due to variations in the mains voltage and changes from one end of the band to the other, it is desirable to have some control of the final loading. Such a control can be arranged so that $C2$ is made up of a fixed value to very nearly the correct theoretical value, plus a small amount of variable capacity in parallel to take

case of voltage and frequency changes. Better still, the whole of C2 should be fixed at the correct value and L made variable. With C1 and L at resonance and with the final stage operating under correct conditions of input, one can be sure that the impedance at the output and presented to the power end of the line will be of the correct calculated Z.

PI-NETWORK CALCULATIONS

Methods of calculating values for C1, L and C2 have been described many times both in the "Bulletin" and other technical journals and the writer would refer the reader to a most excellent article entitled "The Design of Pi-network Tank Circuits" by H. Whalley (G2HW) in the R.S.G.B. "Bulletin" for April 1952.

It may be as well, however, to re-emphasise here some of the more important points to bear in mind when designing such networks. In order to calculate the values of C1-L-C2 for any given frequency it is necessary to know the values of R1 and R2, which are the resistances to be matched and XC1, XL and XC2 which are the reactances of the network components (see Fig. 1).

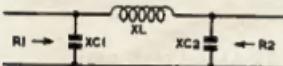


Fig. 1.—Pi-network suitable for harmonic suppression.

In such a network the sum of the capacitive reactances must be equal to the inductive reactances when at resonance, and of a suitable Q value, in order to give the "flywheel effect" so essential for the operation of Class C r.f. amplifiers. Q values from 10 to 15 are suitable for efficient operation of the p.a. and for reasons explained in the article already referred to, the impedance ratio to be matched, i.e. R1 to R2, should be appreciably less than 100:1. R1 is the resistive impedance that the p.a. must work into in order to deliver its rated power output.

In class C operation and steady carrier condition, the r.f. voltage at the anode of the p.a. valve is about 80% of the d.c. supply voltage. If the h.t. voltage be called Eb, then the peak r.f. voltage will be 0.8 Eb, and the r.m.s. value of this voltage E will be 0.707 \times 0.8 \times Eb or 0.57 Eb. The r.f. power actually delivered from the p.a. valve may be taken as 66% of the d.c. power input. This power is delivered into the effective anode load R1, thus $E^2/R_1 = P$, and $R_1 = (0.57 Eb)^2/P$. R2 is the surge impedance of the transmission line to the aerial system and in many cases will be around 75 ohms. This value will not be affected by the inclusion of a low-pass filter provided the line is correctly terminated by the aerial system and the filter has been designed for an impedance input of 75 ohms.

PRACTICAL EXAMPLE

Taking a specific example, suppose that the d.c. input to the final is 750 volts at 200 mA. (150 watts input). Then Eb will be 750 and P will be 100.

From the formula,

$$R_1 = \frac{(0.57 \times 750)^2}{100}$$

$$= \frac{427.5^2}{100} = 1830 \text{ ohms.}$$

R2 = 75 ohms, and

$$R_1 = \frac{1830}{75} = 23:1$$

For convenience and greater ease of the use of the excellent graphs in Whalley's article, an answer sufficiently correct can be found from $R_1 = 2,000$ ohms, $R_2 = 75$ ohms, and $R_1 : R_2 = 25:1$, and the circuit Q value 12. From the curves we then get $XC_1 = 185$, $XL = 220$, and $XC_2 = 25$. From resonance tables the exact values of C1-L-C2 for each frequency required can be obtained. Since 750V \times 200 mA is a popular condition, using such valves as a 4D22, 828B and QV6/40 (sections in parallel) or a pair of 807s in parallel, actual values are given in Table 1.

Freq.	C1	L	C2
3.5 Mc.	250 pF.	9.5 μ H.	1400 pF.
7.0 "	5.0 "	650 "	
14.0 "	65 "	2.5 "	300 "
21.0 "	40 "	1.75 "	210 "
28.0 "	30 "	1.2 "	150 "

Table 1.—Values of C1-L-C2 for conditions of 750 volts at 200 mA. and Q of 12.

For efficient operation and good harmonic reduction the ratio of R_1/R_2 should be as low as possible and the Q kept at 10 or 12. For this reason low voltage and high current type valves are easier to use with good efficiency than those of the 4/65A or 813 types using high anode voltages.

With these features established and put into operation, one can be sure that the correct impedance will be presented to the power input end of the transmission line. There remains then only the problem of ensuring that the load or aerial will reflect back a similarly correct impedance at zero phase angle, for the total power generated by the transmitter to be transferred to the aerial. (Ignoring normal line losses which cannot be avoided.)

MATCHING THE TRANSMITTER TO THE AERIAL

Unfortunately this problem is not so simple to resolve—somehow the aerial has to be arranged so that when coupled to the low impedance transmission line from the transmitter, it "looks back" along the line as a pure resistance of 75 ohms. Many devices have been used in Amateur Radio to tell when the transmitter is matched to its aerial load: impedance bridges, r.f. ammeters, s.w.r. detectors and similar devices all supply valuable information. Not one of them, however, is capable of telling the whole story. Ideally, what is required is some device that can be inserted in the low impedance line between the transmitter and the aerial matching network, a device that can be left permanently in the circuit and capable of passing the full power from the transmitter. This apparatus must be able to detect any deviation from correct impedance and zero phase angle

and be able to compare these factors directly with conditions set up in a perfect load.

Such a device is The Antennamatch which has been devised and adapted for Amateur use from a unit designed by Virgil True of the U.S. Naval Research Laboratories. It was originally intended to drive an automatic aerial tuning system and is capable of furnishing valuable visual information for any radiating system.

The Antennamatch as now developed and adapted will furnish the following information:

- It will indicate when the load impedance is of the desired magnitude or if it is too high or too low.
- It will indicate when the load is non-reactive, or if not, whether the reactance thrown back is capacitive or inductive.
- When the load has been adjusted to the correct and desired value and is non-reactive, it will indicate the power output from the transmitter as accepted by the aerial.

The device consists essentially of three measuring instruments in one unit:

(1) Impedance magnitude detector. (2) A phase angle indicator. (3) An output section containing an r.f. ammeter and a dummy aerial. The particular version described in this article is designed for use with 75 ohm line and a maximum r.f. power of 100 watts.

The theory of the impedance magnitude and phase angle detectors is not at first glance apparent and the following brief explanation as to their working may serve to show their particular suitability for helping to solve most of our aerial matching problems. Fig. 2 shows the essential circuitry of both the impedance detector and the phase angle detector.

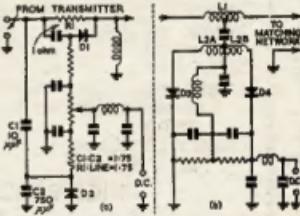


Fig. 2.—(a) Circuit diagram of the impedance magnitude detector. (b) Circuit diagram of the phase angle detector.

IMPEDANCE DETECTOR

From Fig. 2a we see that a resistor is placed in series with the transmission line. The r.f. voltage drop across this resistance is detected by means of a crystal diode D1. At the same time a voltage which is a portion of the line voltage is applied to a second diode D2. The voltage applied to D2 is a constant fraction of the line voltage, determined by the ratio of C1 to C2. The voltage applied to D1 is the voltage drop across the one ohm resistance R1 inserted in series with the line. The ratio of C1 to C2 is approximately 1 to 75, thus when the total load impedance mea-



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ured at the output of the sensing circuit is 75 ohms, the voltage applied to D1 is 1/76 the line voltage, i.e. the same magnitude as the voltage applied to D2. We have therefore two arms of a bridge circuit and the d.c. output voltage will be zero.

The accuracy of this circuit is such that as the ratio of C1 to C2 is 1 to 75; at balance condition the impedance seen by the sensing unit is 74 ohms. The terminal impedance to the feeder line then 74 ohms plus the one ohm series resistance or 75 ohms. If the terminal load impedance is greater than 74 ohms, the voltage applied to D1 is less than the voltage applied to D2 and the d.c. output will be positive. Conversely, if the load impedance is less than 74 ohms the voltage applied to D1 is greater than the voltage applied to D2 and the d.c. output will be negative. Such a d.c. response varying both in polarity and magnitude according to whether any incorrect load presented to the output side of the detector is either too high or too low in impedance is ideal for indication on a centre zero reading meter or for operating a servo controlled balancing system.

THE PHASE ANGLE DETECTOR

The phase angle detector (Fig. 2b) consists essentially of an inductance in series with the line, coupled to another inductance across which a Foster-Seeley type of discriminator is connected. The coupled inductance is centre tapped and is in effect two inductances L2A and L2B in series. The voltage applied to D3 (a crystal diode) is the vector sum of VC2 (a voltage in phase with the line voltage) and VL2A an induced voltage that leads the line current by 90°. Similarly the voltage applied to D4 is the vector sum of VC2 and VL2B, an induced voltage that lags the line current by 90°. The d.c. voltage VO is the difference in magnitude of these two rectified voltages.

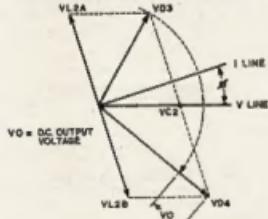


Fig. 3.—Vector diagram of the phase angle detector.

A study of the vector diagram (Fig. 3) reveals that as the phase angle goes to zero, when the load becomes purely resistive, the output of the circuit goes to zero, and that the sign of the error voltage is dependent upon the sign of the phase angle and whether the change be caused by an inductive or capacitive reaction reflection. These are the two prime requisites of a detector to control a servo system or indicate on a centre zero reading meter. Another desirable feature of this circuit is that the sensi-

tivity, defined by the rate of change of voltage out with respect to a change in phase angle, occurs in the neighbourhood of zero phase angle. This permits extremely accurate phase angle correction.

From this theoretical explanation of the working of the impedance and phase angle detectors, it will be seen that the output from both detectors is zero when the terminal impedance of the line is 75 ohms in magnitude and has a phase angle of zero degrees. This is the condition for a perfect match between aerial and feeder line, and as such, a condition for maximum transfer of power from transmitter to aerial.

When in practical use, the output side of the detectors is first connected to an ideal pure resistive load (i.e. dummy aerial) and the transmitter set up to its tuned up condition (i.e. minimum dip on the p.a. current meter at the correct current reading in loaded condition). In our specific example previously mentioned this would be 200 mA. with the anode volts at 750. As the transmitter will then be operating into the correct load, both centre zero reading meters on the detectors should read zero. If this is not the case, small corrections can be made by use of the two variable potentiometers. The purpose of the potentiometers is to bring about a correct balance and to permit of some variation in the fixed ratio of C1 to C2 or R1 from one ohm thereby making the circuit components less critical.

The transmitter having been correctly set up into the dummy load the output is then switched to the aerial matching network which is so adjusted to bring both indicating meters to their centre zero point. When this has been achieved the aerial should present the correct load and accept the same power at exactly the same d.c. input to the p.a.

(Part 2, to be published next month, will describe the construction and use of the Antennamatch.)

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PREDICTION CHART, SEPT. '61

Mo.	E. AUSTRALIA — W. EUROPE S.R.												Mo.
0	2	4	6	8	10	12	14	16	18	20	22	24	45
25	—	—	—	—	—	—	—	—	—	—	—	—	45
21	—	—	—	—	—	—	—	—	—	—	—	—	21
14	—	—	—	—	—	—	—	—	—	—	—	—	14
7	—	—	—	—	—	—	—	—	—	—	—	—	7

Mo.	E. AUSTRALIA — W. EUROPE L.R.												Mo.
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Mo.	E. AUSTRALIA — MEDITERRANEAN												Mo.
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Mo.	E. AUSTRALIA — N.W. U.S.A.												Mo.
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Mo.	E. AUSTRALIA — N.E. U.S.A. L.R.												Mo.
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Mo.	E. AUSTRALIA — CENTRAL AMERICA												Mo.
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Mo.	E. AUSTRALIA — S. AFRICA												Mo.
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Mo.	W. AUSTRALIA — W. EUROPE												Mo.
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Mo.	W. AUSTRALIA — N.W. U.S.A.												Mo.
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Mo.	W. AUSTRALIA — N.E. U.S.A.												Mo.
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Mo.	W. AUSTRALIA — S. AFRICA												Mo.
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Mo.	W. AUSTRALIA — FAR EAST												Mo.
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A SPECIAL PLACE FOR THE RADIO AMATEUR IN NATIONAL DEFENCE

Part-Time Service with the Citizen Air Force (Auxiliary) Squadrons

DO you, the Radio Amateur, realise that, because of your special skills, you have a lot to contribute to the national defence of Australia?

Are you aware that training is available to you which will increase your contribution and at the same time broaden your own knowledge of Radio?

If you cannot answer these questions in the affirmative, the following article will tell you how part time, paid service in the Citizen Air Force can help the nation and help you.

WHY WE HAVE A CITIZEN AIR FORCE

In time of war or national emergency the R.A.A.F. will be required to step up its activities. Certain sections of the R.A.A.F. will need greater numbers of skilled technicians and tradesmen to cope with the increased amount of work. It is the task of the Citizen Air Force squadrons during peace to convert skilled men to R.A.A.F. procedures and equipment so that they will be immediately available for productive service in time of war. It is considered that in a future war there will not be sufficient time for men to be trained as was the case in World War II. This leads to common acceptance of the fact that we will fight with what we have at the outbreak, and the C.A.F. auxiliary squadrons will be a part of "what we have".

This concept of C.A.F. service is not new to the Radio Amateur. Before World War II the R.A.A.F. Wireless Reserve was formed to ensure that the large body of Radio Amateurs, who were willing to serve the nation in wartime, would be better equipped to do so by being trained beforehand in R.A.A.F. procedures and equipment.

This organisation was of tremendous importance to the R.A.A.F. when war broke out. Its members quickly filled key posts in the larger R.A.A.F. allowing a great expansion to take place very rapidly. By the end of the war many members had reached senior rank and one had become a Group Captain.

C.A.F. squadrons exist in five of the States and are located at bases adjacent to their respective capital cities as follows:-

Victoria: No. 21 City of Melbourne (A) Squadron, R.A.A.F. Base, Laverton.

New South Wales: No. 22 City of Sydney (A) Squadron, R.A.A.F. Base, Richmond.

Queensland: No. 23 City of Brisbane (A) Squadron, R.A.A.F. Base, Amberley.

South Australia: No. 24 City of Adelaide (A) Squadron, R.A.A.F. Base, Edinburgh.

Western Australia: No. 25 City of Perth (A) Squadron, R.A.A.F. Base, Pearce.

Each of these squadrons utilises the training facilities available on the base and as these vary from base to base the squadrons have slightly different requirements for technical personnel. For instance, No. 21 Squadron is mainly interested in you, the Radio Amateur, because the R.A.A.F. School of Radio is also based on R.A.A.F. Laverton and extensive facilities are available for training radio technicians, telecommunications technicians and operators. A limited number of suitably qualified personnel are also required for training as airframe and engine mechanics and fitters.

THE IMPORTANCE OF RADIO AND COMMUNICATIONS TO R.A.A.F.

During an increase in R.A.A.F. activities in war or national emergency, one of the first elements to feel the strain is that concerned with message handling. It becomes necessary for 24-hour watches to be maintained, thus requiring more operators. The handling of more traffic means less time for servicing and maintaining the transmitting and receiving equipment. Much the same considerations apply to the equipment used in connection with aircraft, such as navigational aids, control tower equipment and radio and radar gear carried in aircraft.

To keep the aircraft flying at a high rate, serviceable radio equipment, whether on the ground or in the air, is just as important as an adequate supply of fuel, bombs, ammunition or missiles. This is particularly so in these days when aircraft operate in all types of weather and rely exclusively on radio and radar for navigation and, in many cases, for weapon releases. It is clear, therefore, that increased numbers of skilled radio and communications personnel are required to carry out repairs and service the various equipments in the shortest possible time.

During war an aircraft, grounded through unserviceability, is of no use at all. Similarly, unserviceable communications equipment or shortage of operators will soon cause a backlog of messages which will lead inevitably to delays and difficulties in the planning and execution of flying operations.

ADVANTAGES OF C.A.F. SERVICE TO THE INDIVIDUAL

Apart from the needs of the R.A.A.F. for more airmen in a war or national

emergency, which have been outlined above, there are some definite advantages to be gained by the individual who elects to serve in the C.A.F.

Once in the C.A.F. an airman has access to different and more advanced equipments than those normally available to the average civilian. This being so, he will obviously enhance his value, and thereby his prospects of advancement in his civilian employment. If he is strictly a hobbyist he will certainly improve his technical knowledge.

The comradeship which C.A.F. service offers is similar to that which exists in a club. Men with common interests are grouped together and form a team. The members of this team learn to work and act together and by doing so build up a spirit of mutual reliance and pride in their group. From this a keen spirit of rivalry and competition is built up between the various groups, which in the R.A.A.F. are called flights or sections, and ultimately between the five squadrons.

Each year the C.A.F. squadrons provide interstate by service aircraft for a continuous technical training camp lasting up to 16 days. This period is the time when the training which has been carried out at home bases is thoroughly tested under operational conditions. The C.A.F. airman works alongside his counterpart in the Permanent Air Force and if he does this successfully he has achieved his goal. This year No. 21 Squadron will proceed to Townsville in early September for one week. "On the job" training will be provided for the second week of the camp at Laverton.

The prospect of promotion in C.A.F. squadrons is good for the right type of individual. Initial periods of enlistment are for two years, followed by subsequent re-engagements of one year. A training year consists of up to 52 days which is made up of 12 week-ends and a 16-day continuous camp, totalling 40 days. The remaining 12 days may be made up of "on the job" training by mutual arrangement between the member concerned and his particular squadron.

C.A.F. service costs the member nothing. He receives pay for each day of attendance. His uniform, accommodation and meals are provided and he receives an allowance for fares to and from training parades. However, he must live within a 50-mile radius of the location of the C.A.F. squadron to which he belongs.

It is therefore clear that part-time service in the Citizen Air Force is extremely worthwhile to Radio Amateurs who have the qualifications and the time to spare. Should a situation arise where mobilisation is ordered, (Continued on Page 13)

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FOURTH JAMBOREE-ON-THE-AIR

21st and 22nd OCT. '61

Time of commencement: 1000 hrs. Sat. 21st. Duration: 48 hrs

Interest in this event is growing rapidly as more and more Amateurs and Scout Groups are getting together to arrange their participation. In most cases the Scouts will come along before the Scouting Jamboree to visit the Amateur Stations but in some areas portable stations will be set up in the Scout Halls and Camps. Radio Clubs will be offering their full cooperation, the intention being to put the public on to the work of the Mourabin Radio Club setting up a portable station at Clifford Park 3000 Senior Scouts from all over Victoria are expected to be in camp the 21st.

In areas where there are no Amateur Stations available, listening groups will be established. It is hoped that SWLs will help in this way and submit logs.

The following Amateurs have accepted the invitation of the Royal Scout Association of Victoria to assist with the co-ordination. They will be available on Tuesday and Thursday evenings on 80 metres from 2025 hours.

VK3AWL—John Brown, Eastern Mel-

bourne Suburbs.

VK3AUL—Arthur Lock, Central and

South-Eastern Area.

VK3AKW—John Kinseala, Central West-

ern Area.

VK3AZL—Jim Stevens, North Western

Area.

VK3AZU—Gordon Morrison, Gippsland.

VK3AZB—Jim Bainbridge, Grelong Area.

VK3AGD—John Woodburn, South

Western Area.

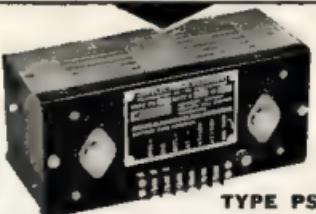
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D.C. Input Current: 5.9 amps. at 60W. output.

D.C. Output Voltages (14 V. in.) 400, 300, 200 or 150 V.;

400 & 200 simultaneously or 300 & 150 simultaneously.

D.C. Output Current 750 mA maximum total from full

and half voltage taps or 150 mA. each if switched to

alternate loads.

Efficiency: 78% at 60 watts output.

Operating Frequency: 1 Kc/s.

Maximum Operating Temp. (i.e. ambient air temp. at

point of installation) 150°F. (approx. 65°C.).

Filtering: Adequately filtered in full voltage output

lead and provision for filtering in half voltage output.

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Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

ROSS HULL CONTEST

Editor "A.R." Dear Sir,

Although it is rather late to suggest rule changes, I would support strongly the suggestions made by VK3QV.

Most entrants would agree that if the objects of the Contest are to be realised then its conduct should be such that:

- (a) All entrants compete on an equal basis - no geographical bias.
- (b) Scoring is weighted according to the difficulty of the contact.
- (c) Scoring and checking is as simple and rapid as is consistent with (a) and (b).
- (d) Rules are clearly stated.
- (e) Results of the Contest are in a form enabling analysis of v.h.f./u.h.f. propagation conditions.

Without wishing to submit detailed proposals, we might consider the following:

(a) "Cross town" contacts are clearly "out" because their admission favours the heavily populated areas, quite apart from the absurdity of giving points for contacts which require no operating technique or effort. An exception should be made for v.h.f./u.h.f. contacts which should be encouraged.

(b) For u.h.f. activity, points should be at least doubled for successive higher band contacts in the u.h.f. region. A number of anomalies

exist in the present method of 50 Mc. band scoring. Equal scores are awarded for all overseas contacts. This ignores the original handicaps that exist for overseas working. Neither is an allowance made for the differing propagation conditions within a State call area. It would be desirable to have the present Contest results and divide VK land into areas (perhaps cutting across State lines). The scores could then be weighted according to the rarity of the openings between these areas as in the present system. This would improve the present system without introducing the labour involved in distance scoring.

(d) The '60/61 rules are NOT clearly stated. Example, Rule 5 "Only one contact per band per section each calendar day" should read "Only one contact with the same station per band per section on each calendar day". The bottom line is also ambiguous, stated and has been misinterpreted. The fat bonus gives no credit for the rarer call areas and should therefore be modified. Also the final scores do not reflect the effort made by the keenest operators since only one point per contact is awarded once the few initial contacts are made with a given call area.

Our final comment concerns the scientific value of these Contests. There must be a considerable amount of useful information on propagation patterns lying dormant in contact logs. We believe that some effort should be made to interpret and analyse the results of the next Contest in order to glean as much data as possible. Has any such effort been made in the past?

—Paul Edwards, VK7ZAJ.
John Humble, VK7 Associate (ex-VK0JRH).

Correspondence on this matter is now closed as the F.C.C. have reached a decision which will be published in a later issue of "A.R." —Editor.

REMEMBRANCE DAY CONTEST

Editor "A.R." Dear Sir,
It is with regret that I write this letter, but I feel bound to refer your readers to Rule 12 of the Remembrance Day Contest— "A.R.", July '61, page 8.

My remarks, of course, do not apply to all Australian Operators who participated, but to those selfish and irresponsible few who, in their quest of high scores, is purposefully and consistently exceeded the modulation capabilities of their equipment, apparently to draw attention to themselves. They are "squat" on an occupied channel while numbers are being exchanged, apparently to clear the frequency of an irritating weak signal, and then politely call the other station.

The main point of the Contest is that those concerned care little if anything, for the purpose of the Contest, or for what the general public, who may be listening, think of the Australian Amateur Radio Operator.

It is the opinion of the R.D. Committee that acceptable logs would be required, but at least in years to come the R.D. Contest would be conducted in a right and proper spirit.

Now the point of this station, I suggest, and request, is to inform Contests of the presence

a number of responsible persons monitor the various bands, and where necessary recommend to the Contest Committee the public disqualification of offending operators.

I trust that the wrath of many will descend upon me if it will be well worth while that my pips has the desired effect, that is, a Contest in Remembrance of Amateurs who paid for our present conditions with their lives, and not a cacophony of worse than mediocre signals such as obtained on August 13 and 14, 1961.

—Morton P. Davis, VK3GANG.

[Other letters received will be published next month—Editor.]

RADIO AMATEURS IN NATIONAL DEFENCE

(Continued from Page 2)

you would be in a position to know what you were doing from the outset. You would, because of your basic skill, to which C.A.F. training has been added, be of infinitely greater value to the defence of the nation than the man straight from the street. Last, but by no means least, your chances of quick promotion would be immeasurably greater.

VISIT TO NO. 21 CITY OF MELENE (AUXILIARY) SQUADRON

So that No. 21 Squadron can show you the training which it has to offer and the types of equipment available, a visit to the R.A.A.F. School of Radio at Laverton has been arranged for Radio Amateurs on Sunday, 8th October, 1961, from 1 p.m. to 5 p.m. All Radio Amateurs are cordially invited.

The four other C.A.F. squadrons have a much smaller requirement for radio personnel because of their relatively limited training facilities in this field. However, if you are interested in C.A.F. service, you should contact the Commanding Officer of one of these squadrons or the local R.A.A.F. Recruiting Officer.

Commanding Officers are listed below.

No. 21 City of Melbourne (Auxiliary) Squadron: Sqn. Ldr. L. M. Bird, 68-0811.

No. 22 City of Sydney (Auxiliary) Squadron: Sqn. Ldr. L. Reading, D.F.C., Windsor 2271.

No. 23 City of Brisbane (Auxiliary) Squadron: Sqn. Ldr. W. N. Nichol, Ipswich 4051.

No. 24 City of Adelaide (Auxiliary) Squadron: Sqn. Ldr. W. C. Ker-112, M.B.E., Adelaide LX9.

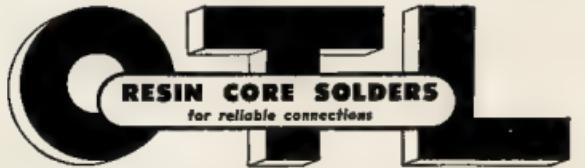
No. 25 City of Perth (Auxiliary) Squadron: Sqn. Ldr. C. F. Fivash, A.F.C., Perth 74-1271.

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V H F

David Tanner, VK3AAU
17 Wolseley Street,
Mont Albert, Vic.

Things seem to be very quiet on the v.h.f. bands at the moment. I can only repeat my comments from last month about the migration to the low frequency bands. The latest one to appear there is Bruce ABZ, no doubt the purpose of these operations being to arrange skips and such things with a change of bands. I add a word of caution about hooking up on low frequency bands before trying to make contact on v.h.f. It has been noticed in the past that there is a tendency to get bogged down and waste time in getting set up with the job hand. This is particularly so if there are a few chaps involved. It might be better if tests were first carried out at the skip times on the actual bands concerned and then, if the tests were successful, the work could be carried out on the low frequency band.

I glad to see that the subtle reason for my changing the notes to their present form has been appreciated, even by those who it was aimed at. I was beginning to despair that it would have to entail the aid of some friend of a friend to get the word to come people to read the v.h.f. page I heard a rumour that the same gentleman was seen beffring a certain v.h.f. type. Surely he is not thinking of invading our domain.

SIX METRES

Continuing on from where we left off last month, it seems that July 8 and thereabouts produced openings all over the place. VK3 worked into VK5, 6, 7 and 8, while VK1 worked VK3, 4 and 5. This was while VK3 worked all hours from 1100 hrs. Only six VK3s were on though. The sporadic E m.f.s. reached at least 90 Mc. in Robert, but a search of 3 metres proved negative. The local 3-metre network to 90 Mc. reported a few openings. No news from Police and a picture was received from ABN until the local station fired up. On 11th at about 2000 hrs, VK3s were heard in a local morse practice session. The local newspaper gives a report that ABT were active on 90 Mc. in Port Lincoln.

VK3s were also active during their share of openings in the same period. On the first occasion, 8th July, VK3RY was heard in South Australia and called to no avail. The following Saturday, Mike VK5ZCZ heard VK3s and VK3s with VK3RY but not the other way. On the following Saturday again, VK3RY heard VK5s SZCR, SZFQ and SZFO. The latter was running broken tones and calling CQ with his beam to the sky. His signal was peaking to 90 Mc. Many who were wasting trying to break into contact between the two VK3s, all to no success. Roy now knows what it is like to call and not be heard.

No other activity has been reported on 80 Mc., which is not surprising as it activity in those States is at a low ebb in Melbourne. There seems to be a steady upturn in interstate bands. VK3AQJ provides info. Lance VK3AHL is still active, Michael VK5ZCZ has been heard and both Ivan VK3ASG and Jack VK3ZCZ are still about almost there using 80 Mc. Your truly is the only sideband big time in last, with about 40 watts peak to a 6466 and a large halo antenna, so watch out in Adelaide in the middle of September as I shall be heading your way.

TWO METRES

Lee ZBZ, ex-3CXN, has been working on transistor equipment for 144 Mc. A mod. one of all things for a tx and a converter/rx for reception. He has worked 32ZL using the equipment. Dick 2ZCF has a new mobile converter and is looking on the 144 Mc. side. A 5CW vco, univibrator and a neutralised triode 6ES5 half as a grounded grid stage, second half as a mixer, 12AT7-6AK5 grid osc. and multiplier. A very fine converter.

Some new stations been heard out of Sydney include ZL1ZT, ZL1AS, ZL1RN and ZL1H.

Local activity around Melbourne is fairly low at the moment. A look around last Friday's activity night revealed a marked preference for the fire and rescue. Those who were around were represented by either having or working Ray MATN in Birchip, about 100 miles north-west of Melbourne. Ray was first heard working SZCR in Mt. Gambier. He later

told me that he had worked into Adelaide to 32DR. Long distances don't mean anything up there, and a contact of 150 miles or so is regarded as quite normal by most of the gang around the Mallee. ZATN's frequency, for those interested, is 144 Mc. 1000 hrs is the usual time of a.m. to a 54 element beam 120 ft Ray also likes to have a sideband rig going soon.

Alan 3AEL at Ascot Vale is making a come back to two metres with a 32ZL and eventually this will be followed by a full size station again. Two new stations are 3FY at Bendigo and Merv. 3ZMT at Heidelberg. 3DF at Mentone hopes to have 150w. to a pair of 34G4s. Max 3ALK has a tape recorder now and will be available to record and replay transmissions on two metres.

Nothing to report from VK8 except that 3ZDR and others are still working Herb 3NN and Yanac quite regularly.

The boys in Hobart are hoping to see a new batch of openings on the low frequency bands soon. 3ZD and 7OM have been mentioned. 3ZD is back after a short absence. Another New Norfolk station due back on the air is 3AFK. A new call at Oakdale, halfway between Hobart and Launceston is Phillip TZBA who will be operating on two metres. In spite of what has been said to the contrary, receivers are getting continual attention to extract the weaker signals. TZAO is now using 3ZD as a reference station and is not sure what the books say it should, but no distant signals have been provided to check its worth. No doubt TZL and company would be pleased to supply some.

The July eight event in Sydney was a hidden tx hunt organised by 3ZCF and 3ZCY. They were hidden in a very inaccessible spot in Duffy's Forest. No one found them, and when the hunt was called off and instructions given for the next section, most of the hounds had considerable trouble finding. In this day and age, a mobile radio for both h.f. and v.h.f. finishing at Dural, was won by Dick 3ZCF on v.h.f. and Bob 3ASZ on h.f./v.h.f. The day was not as successful as hoped due to the very poor weather (but that's what you get). The mid-winter contest, open section, was won by Dick 3ZCF, the one-hand winner is yet to be decided when all the logs are in.

The VK3 two metre scramble on 9th July was quite successful with 30 stations competing. The winning section and outright winner was Dick 3ALB at Gladstone, with Eric 3ZL and Rex 3ZKR filling the other two places. In the city section, Alyn at 3ARC was first, followed by John 3ZCB and Frank 3AFW. The four hours on the evening of 12th July had Russ 3ZCF and Roy 3DZ as the top two. The most enjoyable night was had by the three hounds, the winner being Maurice 3ZCF, with Peter Reid second and Tom 3AOG third.

The chaps in Perth had another very good turn out. July 11th was a one or two hour take parting. Some of them had no gear, but they either used the clues to go to the tx, or else they followed another car. Lance 3ZBN ably assisted by Eric 3ZBW was first, followed by Chas 3ZCF and his son, and Mike 3ZCF. Roy 3RY was fourth on the scene also. Roy 3BO found that his Iota would go cross-country and had to back-track before eventually getting there. They were very pleased to see Jack 3BV and Bob 3BW participating in the fun. Other news is that Brian ex-3ZBZ now has the call 3VV.

It is very pleasing to report that permission has been granted for the West Australian V.h.f. Group to set up their beacon on 144 Mc. They will be working with the 32ZL and 32ZL for construction and it looks as though they will be using a Q3DX/15 in the final. Further advice on frequency and times of operation will be given later.

ONE METRE AND ABOVE

Dick 2ZCF has had some enquiries from VK6 for more information on 378 and 1885 Mc gear, and Eric 3ZCF is trying to get some of the chance to write some articles for "H.R." Ross 3ZD at Broadford, Gippsland, at Eltham, Victoria are still keeping skips each Monday and Friday night at 8 p.m. They have each heard each other, but very weakly, and no QSO has taken place. David 3AW has been carrying on checks with Herb 3NN and the working results, though the signals are a bit down on the 144 Mc. side, probably due to power antennae on 288.

The following is my present supply of disk tapes worked on 144 and 288 Mc. Some of the distances may not be very accurate so if you have any amendments, don't hesitate to send them along. Some of the call signs listed are not very active these days, but they are included for interest. Those who particularly like to work the distance charts should be worked by some of the newer operators so if you have anything over 100 miles on us, let's have it.

	144	288	144	288
	Mc	Mc	Mc	Mc
VK3AAU	250m.	250m.	VK3BC	270m.
VK3ATN	44cm.	44cm.	VK3KK	65cm.
VK3ATY	34cm.	11cm.	VK3LR	48cm.
VK3AZ	34cm.	28cm.	VK3EDR	180cm.
VK3CS	35cm.	11cm.	VK3ZFG	180cm.
VK3ZOG	39cm.	23cm.	VK3EZK	34cm.
VK3ZCW	51cm.	—	VK3LZ	36cm.
VK3ZD	38cm.	—	VK3TF	36cm.
VK3ZAW	46cm.	25cm.	VK3AW	48cm.

Next month I will publish the six metres information including the number of stations worked and the number of DX countries and call areas worked.

V.H.F. GROUP MEETINGS

The July meeting of the VK3 V.h.f. Group was entitled "A Mobile Forum". Jim 3PPW was in the chair, with Bob 3OA, Dave 3AWZ, Phillip 3ZBX and Dick 3ZCF/3 on the panel. Dink was unable to be in attendance so he provided the other end of a demonstration of two mobile modes. He had two two-metre mobiles, one working on the 32ZL and the other on the 3ZCF. He had two mobiles, one at each end of the meeting so Dick was able to hear the discussion at the meeting and then give them his views on the subject. A very successful arrangement.

The VK3 V.h.f. Group meeting was held in the very pleasant surroundings of the Secondary Teachers' College, thanks to John 3AKZ. After the business they were treated to a series of lectures on mobile gear by John 3ZPF, Michael 3ZCZ and Bill 3AHZ. The boys also had the opportunity of saying farewell to Alyn 3ZGA who is being transferred to the West.

The last meeting of the West Australian V.h.f. Group was the annual general meeting and meeting. Roy 3DZ was elected President and Ned 3ZDZ as Secretary.

The Hobart July meeting took the form of a demonstration of test equipment and its application to v.h.f. rx alignment. Equipment supplied by VEJ, 3AFW and 3ZCF included a receiver, generator, etc., and noise generator with associated equipment. Two more 3Z's supplied by VEJ, 3MY, 3ZAY and 3ZAO were put through their paces and not found lacking.

Has you passed along your two metre frequency to 3ZDE yet? He is compiling a list to enable newcomers to pick a clear spot and also as a means of helping you locate the rare DX. Roy can be contacted at 18 Clarendon St, Reservoir, so drop him a line.

COMING EVENTS

From 8th to 9th Sept. the VK3 Division will stage an exhibit in a Career and Hobbies exhibition at Hobart. Included will be a display of the 32ZL and 3ZCF. The 32ZL will be used on 3 MHz and we're hoping for plenty of local activity and mobiles around the city.

Peter 3ZDO has asked me to say a word or two about a project which he is trying to organise. The ultimate aim of this project is to accomplish communication between VK3, VK5 and VK6 on a 32ZL. Mc. gear, big beams c.w. + s.s.b. low noise rx's and most of all, persistence with skips are a must if this is to be accomplished. There are many of us who think that it can even then if it may take a while, and some are interested in Peter's idea and give him some encouragement. It may be possible for one or two of you to get together and pool your equipment as 3ZCS and I are doing to get a really first class station going. To all those interested in the project, Peter is sending a questionnaire to all those interested in early October, so see what you can do.

The VK3 V.h.f. Group has finalised the rules and dates for the coming field days. This will be held on the 1st and 2nd of October with single and multiple operator stations, and also home stations. The field days will be held on the third Sunday of each month with the exception of Feb which will coincide with National Field Day. The four hours of operation are from 10 a.m. until 5 p.m. Operation may be on any v.h.f. band. Crossband operation is permissible but the special points available for 328 Mc. and above are not claimable. For multiple operators, it is the one group of call signs that are the only ones to be used.

"Make up your numbers from the start to be on the safe side!" Connection to public or private generators is permissible. The port of entry is to be within one mile from the visual QTH.

There are eight field days to enter in but only your best five scores will be used to pick the winner. The scoring will be 3 points per contact, possible to portable, 1 point per portable for a portable to home contact. On bands 328 Mc. and above, the score is doubled, except for crossband contacts which will be as for 3 and 2 metres. For the longest distance work-

(Continued on Page 13)

ECKO NO. 88 TRANSCEIVER

Portable, xtal locked 4 channel, 40 to 43 Mc., 14 valves, 1L4, 1T4, 3A4, etc., 12v. 3a. input power supply. Less crystals, mike and headphones, etc.

To Clear, £6/10/0 each

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Single, 1/32 inch synthetic insulation. 1,000 ft. reel, 50/- Weight approx. 5 lb.

GENEMOTORS

Command Receiver Genemotors, 28v. input, 250v. 60 mA. output, new, 25/-

V.H.F. RECEIVERS

English Type S.L.C. No. 4. The freq. is unknown. Contains two VU39As, two VR136s, two VR68s, seven VR65s, six EA50s, one VT127, J50 dry rectifier, five if. transistors and high cycle power transformer. In metal case 19 $\frac{1}{2}$ long, 8 $\frac{1}{2}$ wide, 9 $\frac{1}{2}$ deep. Brand new.

35/- each plus 5/- handling charge. No Information Available.

VALVE SOCKETS

7-pin Miniature Valve Sockets and Shields. New. 15 for £1. 9-pin Valve Sockets, McMurdo, 9d. ea. Octal Valve Sockets 1/8 each

"HAM" RADIO SUPPLIERS

V.H.F. RECEIVERS

Type R89/ARN-5A. 300 Mc. Valves: seven 6AJ5s, two 12SN7s, one 12SR7, one 28D7, six relays, and three crystals of 65229 Kc. As new. 25 each.

MULTIMETER, MODEL 200H

20,000 ohms per v.d.c. 10,000 ohms per v.a.c.



Specifications:

D.c. Volts: 0-5, 25, 50, 250, 500, 1,500

A.c. Volts: 0-10, 50, 100, 500, 1,000

D.c. Current: 0-50

mA: 25, 250 mA

Resistance: 0-60K ohms 0-6 meg

Capacitance: 0.02-0.3

MF. cat ac 25

0.0001-0.01 μ F

at ac 250v.

Deg. Del. Minus 20

200, 220, 250, 280

Output Transistor 0-10,

30, 100, 500 and

1,000

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1.5% 1 piece

Dimensions: 3 $\frac{1}{4}$ x

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Complete with internal battery, testing leads and prods.

Price £5/17/6 post paid

1155 GENEMOTORS TYPE 34A

Input 9.3v., output 225v. at 110 mA. Complete with relays and filters, in case. Weight 30 lbs. 19 $\frac{1}{2}$ each. 5/- handling charge.

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Money Orders and Postal Notes payable Nth. Hawthorn P.O. 5/- Packing Charge

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American Bradley, 2" long, $\frac{1}{2}$ shaft, 1" diam. Available in following sizes: 20,000, 25,000, 30,000, 50,000, 100,000, 250,000 ohms, 1 and 2 megohms.

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SCR522 28v. Genemotor power supply, 20/- 5/- packing fee.

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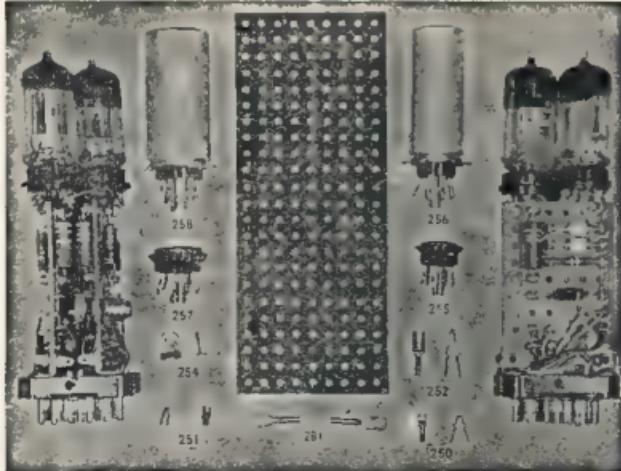
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P.V.C. insulation, 0.028. Red or white. 100 yd. Rolls, 10/- Roll.

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NOTES

NEW SOUTH WALES GENERAL MEETING

An excellent attendance occurred at the July general meeting under the chairmanship of the President, Mr. J. V. T. The topic of the evening was "Power Lines, or Standard Telephones and Cables Ltd." its subject being "Silicon Rectifiers in Power Supplies." Those present were well briefed on the use of these more recent developments which will no doubt revolutionise the industry in relation to the tubes which have been with us so long.

An important item of general business was the ratification, by the meeting, of the Council's recommendation to proceed with the building of extensions to Divisional headquarters at Crow's Nest. Building will commence shortly and should be completed early in the coming New Year.

TAPE SERVICE

Of the many functions of this Division, possibly one of the most important is the service rendered to the amateur and industrial groups in that we record lectures so that they in more remote parts of the State may hear the lectures which are given at our monthly meetings. This service has proved very popular since its inception and has been patronised by many of the clubs in N.S.W.

The following lectures are immediately available for your use: Transistor by ZAAH, V.H.F. Omni-Range by Paul Griffin, S.A.b. by ZAC, Master Oscillators by J.R., T.V.I. Suppression by ZFA, H.F. Direction Finding by ZJR, and B.B. (Part Two) by SAC. There is a list of topics to follow on various subjects of interest.

Members are invited to contact the Education Officer, Harold ZAAH on this matter and arrange a tape lecture for your next meeting. There is no charge for this service, only the return postage for the tape. Slides and/or drawings accompany these lectures.

COMBINED OPERATION—DURAL

Many hardy souls ventured forth on the wettest Sunday for month in the direction of Dural for the combined operation of the W.L.A. (N.S.W. Div.) and the 1st Divisional Signals Regiment. The day commenced with a mobile rally, all cars converging on Dural by the end of the morning.

A unit of the 1st Divisional Signals under the command of Capt. A. Ballantine was in attendance, and after a hearty meal, demonstrated some of the equipment in use by the Armed Forces at the present time.

Results of the mobile rally are: low frequency mobile, ZAAH and ZAMA.

COUNCIL MEETINGS

Your Divisional Council has been extremely busy this last many months with the administrative functions of the Division. It will be realised that the duties are heavy indeed, especially with the great increase in membership over the past few years. The result is more and longer meetings for those seven members of Council.

As members of an association which is progressing at a fantastic rate, we must take stock of our individual, and the whole, welfare as individuals cannot spare a few hours weekly, not only for our own benefit, but for the good of our fellow Amateurs. We are fortunate in having many willing helpers in our many clubs, but we believe there is plenty of room for more of you. Just a word to any of the officers of the Division will fix it. You'll be welcome with open arms.

Council has met in July on three occasions and has attended to all current matters.

SILENT KEY

It is with deep regret that we record the passing of:-

VK2AKR—John A. Lindsey

VK3OK—E. H. Jenkins

VK4KL—Ivo Johnson

JAMBOREE-ON-THE-AIR

In conjunction with the Boy Scouts' Association this Division is taking its part in the Fourth Annual Jamboree-on-the-Air. It will be recalled that in previous years other Divisions have also participated, and displayed their part in this event which has done much to centralise goodwill among Scouting Members in other States and throughout the world.

The Jamboree this year will be held on Saturday, 21st Oct., and Sunday, 22nd Oct., from 0001 GMT to 2359 GMT.

Local stations will be a station operated by the Boy Scouts' International Bureau under the call VEJAM which will operate on 28400, 21155, 14155, 7210 and 3750 kHz for the duration of the Jamboree. This station will issue a special QSL card for the event.

Members are requested to contact their local Scout Groups and with them make contact with the many Scouts who will be happy to speak with their followers at home and abroad.

SECONDARY SCHOOLS RADIO CLUB

A number of Radio Clubs have been formed at various schools to enable some of the younger generation to receive some instruction in the rudiments of Radio, and which will no doubt encourage them to join our ranks in due course. Such clubs are now in operation in Canberra, Belgrave, Bonogin and Kingisgate, with others to follow, and consultations have been made by Harold ZAAH, Max ZMP, Reir ZTA and others on this matter with the authorities of this Division. It appears that approaches may be made to amateur stations in the States and also to youth clubs and similar organisations. Those of our members who may be able to give assistance to this scheme are requested to contact any of the gentlemen mentioned above.

HUNTER DIVISION

A complete ban on the use of sidecutters was in force during the July meeting of the Branch. The cause of all this was the visit of Vol. 142 to the monthly meeting to deliver his lecture "Wrecker Disposal Course." This was a most interesting lecture and the largest gathering of members and associates seen for some years, yes I said years, was there to hear him. Just in case you don't believe me, I've checked. Just in case you still don't believe me, I've checked again. ZAAH and I took note that the only time, excluding Annual Dinners, was 14th Feb., '32, when 63 were present. At the moment, Mr. Mullen, of budgerigar fame, has my bound copy of "A.R." for '32, so I cannot say what the meeting was all about. Suffice to say that 44 years later there was a rollup of 61 to hear Vol. 1.

What with the Trade Fair and all things have been pretty hectic this month and the meeting of the Hunter, ZAAH and I took three cars off to visit Sydney. We look around. Bill's still having trouble with 50 noise level and the boys from Neesa did a quick job out there the other day putting a new insulator on the 15m beam. All was well until the wind-of-the-potato met same along and now we're back to 50s. Of course the battery charger radiates a good signal too. Bill, and after all that twisted string goes very near it. Anyone got some coax?

Have you been to Tuncurry lately? Low flying aircraft are a real pain in the ZANT. An addition to the farm is the 15m beam along the big mast. Jim says signs are fine and the local spuds report that DX for Jim is commonplace these days. One of these days I might get the other up to the QRT. The small one was raised into position. The other day I got a call from one of the locals. It remains to see what will happen when the other one is erected and a wire swing between them. Even ZAWX may have me.

Another Lakeside Amateur who deserves praise for a job well done is Harry ZAFA. He is now proudly displaying the Australian D.X.C.C. on the shack wall. I might mention that Harry's 30m antenna is a flip-flop beam, but it must work well. I have seen it in action. Jim says Harry's not a bad lad on the key and I'm sure that here is where the secret of his success lies. Another Amateur with a mighty antenna is Les ZBZ. It is said that now it has been raised to about 100 feet above the fence. Whether or not this is true, I'll leave you to judge, but the signal has improved so those broken handles must have done some good.

There are many, of course, who hide their service to the kind of cause. A resident of Westby named Bob has been doing this for years but at last his sins have found him out. Not that he wouldn't have got away with it for ever but he had to give and spend it all by going to the police. Now I don't know if it is possible to hide an 80m dipole behind the garage. Mummy, I just saw Mr. Ross on our tv. He was just standing there in the middle of Six O'clock Rock. But he wasn't dancing

Mummy, he was talking about some game with three balls on a green table. Exit to the tune, "They Wouldn't Believe Me." There's something else I can't believe. Our well known v.h.f. man, Sir ZAYL, has a Stanier and is said to be going mobile with this vehicle. It is not said if on 3 or not, but I'll believe it when I hear him. The problem, by the way, is who buys a Stanier.

Varley ZAY is preparing for his forthcoming lecture to the branch by making pretty patterns on a c.r.o. There is a wobbulator too, in this setup and much midnight oil is being burnt. His son is a car and Stanier is said to be going mobile with this vehicle. Whatever is about will reveal all.

Several new members have been recruited, and three that I know of are Rem Mortimer, Newlands and Andrew Wilson. Norm is from Newcastle, while the others are from the coal city and were introduced to Amateur Radio by Chris ZPZ. Chris dusted down the posthole digger the other day and erected yet another mast in the back yard. It's proposed to put a 15m beam on it, and I hope to favour the Sydney path and 30m work is also contemplated. A really big signal is promised in the future. The pi-coupler is to be scrapped and a new serial coupler will get more m.i. into a high feed.

Bill ZXT also has a signal on 80 and each other band through to 3m. The Thunderbird works very well and pulls in the DX consistently. Bill must have been doing some experimenting too, because ZARZ also mutters something about a 15m beam. Can't be sure. ZARA is still last been heard on 40. He came back to ZAWX the other Monday with phase modulation. From all reports the signal is f.b. and it's really good to hear you back on 40. Bill, I hope you're not in trouble with phases. There is one local number who does this man, who prefers to remain anonymous, placed his nice new Japanese multimeter across the 240v line. It was set on the milliammeter range. Of course the meter didn't like it very much and showed its displeasure by breaking its needle all out of shape. Result, more trade for Japanese meter repairers. He has a certificate though, numbered 1068, and headed P.M.G. It'll be all right.

Our worth while president, ZAWX, is just about ready to put a signal on the band. He has apparently settled all his differences with the electrical filters and wires and the new shack progresses at a great rate. So watch out all you Z's, it's high time and hang on to the gain control lest you are unprepared when the big signal hits the air.

There often is mention of "G.E. Ham News" and articles extracted therefrom. Gordon tells me that he has been able to get a copy of these useful magazines by writing to Mr. Hannom, A.G.E., 187 Kent St., Sydney. I cannot tell you the price, but should you be interested, Mr. Hannom or Gordon can give you the details.

The big event this month of course is the Annual Dinner and Field Day. The Dinner this year is to be at the Esplanade Hotel on Saturday night, 30th Sept., at 7.30, while the Field Day will be held at Blackalls Park on the next day, Sunday, 1st October, beginning at 10 a.m. A really first class programme has been organised and you

W.I.A. N.S.W. DIVISION HUNTER BRANCH

TENTH ANNUAL CONVENTION

will be held on
SATURDAY, 30th SEPT.
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ANNUAL DINNER
at the Esplanade Hotel, Newcastle,
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Model 4/111—suit parallel 807s, 6143s etc. Model 4/112—s. ended 807, 6143 etc.



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- Six Bands: 80, 40, 20, 15, 11, and 10 Meters.
- Kit comprises: Six-Band Coil Unit, Calibrated Dial with Perspex Escutcheon, 2-Gang Matched Tuning Condenser, 1st I.F. Transformer (4.6 Mc/s.), Aerial Trimmer Condenser and Osc. Trimmer Condenser.
- Can be used as Converter—output 4.6 Mc/s.
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going for the Z call in the near future; good luck to you chaps, but what about the full ticket?

Ken JNK is really doing things in style these days. He goes to the pictures on Friday night and takes along a smoko signal rig, talks to the boys and watches the flicks at the same time. He reckons it may be the answer to t.v.l. problems too! Anyway an t.b. signal comes from the pictures at Bendigo. Would like to know what you use as an antenna though, Ken, maybe shoot it through the projector.

Another one to do things in style is Vern JACKW, of 10-cwt. fame. He follows the radio hobby in his XYL to help him operate the rig from the kitchen while she does the cooking of cakes, etc.; can't see this going on for long though, as every time it comes on to Vern he has to turn it off and finish the rest of the cream cakes. Things pretty quiet up Smoko way, maybe due to the snow and temperatures around the 10 degree mark. Who said it was cold in the Antarctic? A small element says 16 m.w.s. is ready to go up and the snow is coming. OK, we won't wait long now before we find out if it is possible to get a 144 m.w. signal out of the bottom of a valley and over the hills and far away. That's about all for this time chaps, don't forget to do your Z calls on Friday night and let the boys know what you are doing or planning to do. 73, ZAU1.

MIDLAND ZONE

A gentle reminder regarding the 80 m.w. hook-up appears to be the best option. Following appearance of the Zone Notes last month with the details of the hook-up on 80 on the first Thursday of every month, a good attendance was registered, but unfortunately it resembled a swl night as almost everyone had a 100% power output and as no one had had the courage to transmit, there would have been a hook-up and JAMA would not have built his fire in vain. Full of enthusiasm, he stoked his fire and tx in the order, but was rewarded with nothing but little else, because his signals were unheard in Maldon, Bendigo and Kangaroo Flat. Be not dismayed OM, better things are in store and someone will speak next month. Even if the XYL's come to the conclusion that the bush abode because Channels 6, 7 and 9 are no longer viewable. At least the best pattern doesn't have any snow on it, which is more than you can say for the picture.

Two m.w.s. up and the scene continues unchanged with 3WV calling most evenings around 7 p.m. He has a good signal out, but has difficulty in receiving weak Melbourne stations. From all reports the rats in Melbourne are good but the power is under-powered, being roughly 100W. More power out and the tx will help the power out and do a lot to encourage activity in the bush. After all, it is useless to build good converters and tx's if these amateur stations won't do likewise.

3WV finds it power out is from a 220, but with the original oscillator, also put power into three tv. channels. Alteration of the oscillator to a 3rd overtone cured this trouble and the receiver once more prevailed in the battle. A 100W detector was used with a crystal putting out a signal at 144, made the first contact somewhat difficult for 3WV to get.

JFO has plans to get mobile on 6 and 3 m.w. Details are not available yet, but all Col needs to do is to travel a few miles from home to the top of Mt. Tarrawonga and a signal should spread all over the State. The Mount will be the site for a Zone Get-together on Sunday, 24th Sept., so forewarned should be forearmed.

After the first meeting of the Zone last month, IBM took home a 3 m.w. converter for t.v.l. purposes, but to date we haven't heard what the boys have planned. It is planned to convert the signal from an HT27 to 144 Mc so that a.m.b. can come from Quambatook. If so, it will be a race between IBM and ZACN because Neville's last words on the subject were the product of 2 ms. sideband from his IFRTE.

MURKINBURN AND DISTRICT RADIO CLUB

The month has gone around all too soon and things happening are a little bit slow, but nevertheless there are some items of interest.

At our last meeting, Mr. ZFQ gave us a very interesting lecture on "Crystal Filters". At our Sept. meeting our film librarian Laurie MCN has selected some very nice color films for our viewing. A group of members are attending the W.I.A. Dinner on menses and also

intend going along to the Ferry Creek Convention, making a picnic day of it. At the Dinner we are hoping to be presented with the trophy trophy won by the Club at the last National Field Day.

As to personal bits, both George JNQ and Bill JJF are in the throes of the initial stages of getting going on a.m.b. The October lecture by Les JAM on earth stations will be of great interest to them as both ZWZ and ZLZ have heard him speak on the subject. ZLZ, who has, has signified his intention of co-operating with the Malvern Troop Scouts in the Jambo-ee-on-the-Block in October. Peter JJF is also participating and we hope many more members will be helping in this worthy cause. The club station should be ready for this event. Other than this our 80 m.w. tx's have still very popular and things are going along very smoothly, new members joining up every month.

In the Hamfest section of this month's issue you will note that we wish to sell an ATS-ARE. This combination has been laying in storage for several years now and we have had many other offers. In view of this and we think it a good idea to dispose of it and get the necessary funds for these projects. It is as original and has not been tampered with or modified, so should be a very good buy for anybody needing a outfit of this nature. We would like to obtain a Type 3 M.W. 3 in good condition. 73, XLC.

QUEENSLAND

Well, how did you like our freeze this year? Few early morning operations failed to tell how cold it was in their locality. Just as well we have so much of that beautiful warm sun. By the time you read this, winter should be well behind you and you'll be wondering where to try the next month. As far as the coast or country with the family is a good excuse I anticipate quite a few new members this year; let us tear ourselves away from 8 winter and 5,000 miles.

John 4FZ with the place of our July Council meeting and Jim 4PR, Bill 4WZ, Keith 4DG, Jack 4FZ, Ken 4VM, Bert 4AO, Ron 4KL, Col 4EF and myself were here. Bert 4AO reported on Federal matters and brought up his matter of items for the agenda of the Federal conference next year. So, chaps, if you have subjects that you think should be discussed on a Federal level start channelling them through your branch now.

For new members we were advised: the correspondence, the news. Bill 4WZ has been hitting it, rushed through; certain items passed for payment; noted that Steve 4BB was in hospital; a nice reply from Mrs. R. F. Roberts in acknowledgement of our wreath received, and a note from Mr. L. S. Smith 4KA who, with our auditor Don Huxley, had come along to present his "Methods of Operation" for, in this case, the Queensland Division W.I.A.

After outlining aims and objectives, Stan dealt with the financials, giving due credit to the bearers and means of carrying out those duties are laid down on paper to try and ensure continuation of one effective system for as long as most of us can see ahead. This endeavour will be carried on by personnel of the organization changes the method do not change willy-nilly, and past mistakes are not repeated.

Coming closer to home, parts of the scheme should also simplify the work of our auditor. We look forward to a system of book-keeping that will simplify the audit. Some discussion took place as the report was being delivered and a few points tied up with giving receipts have to be settled. Stan's report was received and later Don had a few words to say and the meeting came to an abrupt end.

Our thanks to Stan and Don for coming along and giving so much thought to the matter.

A QSL card has been designed by the Tourist Bureau and with their kind assistance we have had far they are involved financially. Money is pretty short but quality is our first consideration and I have no doubts that the Bureau is making a sincere effort to meet us on our requirements.

Lesstacs at our September meeting, Dr. Morrison, 4MO, will give a talk, illustrated by slides, of our overseas experiences, dealing particularly with New York and a "Hamfest" he attended there. Next month date carefully on your calendar, the September meeting are five Fridays in September and be along.

Subject to Council approval, the October lecture will be "Ionospheric Predictions and Theory", while the November lecture will be "Radio Propagation and Recent Research".

The July meeting was held on 26th at State Service Union Rooms with a good attendance to hear Pat Kelly talk on "Radio Astronomy".

The Divisional library has just received six copies of Phil Rand's T.V.I. Handbook

ADVERTISER'S INDEX

well, hve u got the
dope on those
aust bilt tx yet?

BIT INFO HR -

Silly isn't it? Anyway I've given a lot of thought as to how to tell you what we've got, without taking up the whole magazine, and came to the conclusion that the best way is just to tell you as if you had asked me.

We started off with a 150 watt c.w. transmitter, and built it into a very good looking table-top cabinet which we have made out of a new material; plastic coated steel (Marvilate is the trade name). The transmitter itself consists of a Geloso v.f.o. driving a pair of 6146 p.a. tubes with a pi coupler output circuit.

Wanting to make as flexible a design as possible, we arranged it so that any model Geloso v.f.o. would fit, and ensured that suitable component changes would allow the use of either one or two p.a. tubes, and that there would be enough clearance for 807 or 1625 valves if anyone wanted to use them.

In order to reach the widest possible market we have enabled almost any combination of components to be purchased separately; you can buy the complete 150 watt or 75 watt transmitters (two models of the latter) wired, or as kits; with, or without the v.f.o. (have you got a Geloso v.f.o. in that rig that gives you t.v.j. yet?). You can buy the chassis and cabinet only, all drilled with knobs and all, or undrilled for do-it-yourself drillers; you can buy the perforated final amplifier cage to suit almost any final, a set of drawings for drilling the blank chassis, the instruction book (very complete) for both 75 and 150 watt transmitter kits (why not the chassis and pi coupler kits for a linear amplifier); and a conversion kit for changing a 75 watt unit into a 150 watt unit.

Prices vary from £76/7/8 (for the wired 150 watt transmitter) downwards.

I haven't got room here for all the details, so why not write or phone us and we'll send you our descriptive catalogue.

Don't forget, you'll be able to see the equipment at the Victorian Division W.I.A. Annual Dinner at Scott's Hotel on Saturday, 30th of this month

Until then, 73, Ian (Jock) Macmillan

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which will be ready for distribution to members by the time these notes are in print. At this time three copies are set aside for country stations and three are given to members, but this will be varied according to demand. Ken 4VM our librarian, hopes always to have a copy on hand for immediate reference. Please return these as soon as they have served their purpose, or within a month which is the normal life of issue, although extensions may be given.

The Crossed Dipoles award has been withdrawn as we are unable to keep up with demand, and they will be stored with our members of the AFDC's receiver. They may be inspected on 22nd March 1961. [An interesting historical item—the improved model—no transistors—now available Ed.]

This month's unclaimed QSL card list: VK4 4FB, 4GC, 4GE, 4GG, 4HB, 4JX, ex-4JY, 4KK, and 4KCI. I would like to note some of the efficient young chaps at the last Convention. We must have quite a few in the Institute. A good way to gain experience for administration is to become familiar with an organization. A few of your young chaps should gain a wealth of experience and a great deal to the Institute by assisting councilors with their work. Not only would you be training for office, who some of you have to do it some day, but you would ease the burden on older shoulders. There are many more opportunities to be involved and run if when one of us becomes absent for some reason or other there is a "back stop" who doesn't let part of the show slow down, or stop. This should be a show with plenty of young men about. Don't wait to be pushed—take the initiative!

ARMED AND ABOUT

Over 200 W6 cards from VK4TY were checked recently for Norm's application for the "California Award". Good 4XB not seen or heard for some time last year. A lot of new radio receiver alterations using Geloso front end. New countries are being confirmed for Keith 4DG regularly. Being a keen stamp collector gives added interest to the pleasure of working DX. 4KCI is still in the "air" with a 1000 eye operation in Prince Alfred Hospital, seen around city radio shops with Stan 4SA, "Going mobile". Bill 4WS also looks Steve up, as did David 4DP, Ron 4ZDS, who is helping with his 4ZD. 4KCI is a competitor for his full license. 4PC, Monte, amateur more than on TV these days but can still be heard around the bands.

Ron 4RL has built himself a "travel name" for his recent DX record tuners as "the gods". Ron has also built his own converter and has been chaps report a pretty good signal of Bob 4MT, Townsville, from his new s.a.b. rig. Good to hear Bob 4RW on Sunday morning hook-up recently. 40 m is active with VK5 and VK6. 4ZD and 4PC are also active. 4ZD has been made. David 4DF has a new TA23 beam in action. Evan 4EF was in bed with "flu" the other day. Knowing Evan, I doubt that will affect the efficient handling of disposal matters.

Keith 4DG is very interested in the log keeping and amateur band information about them. Keith is also working on an s.a.b. portable. Jim Hillhouse 4ZO of Carpet St, Collingville, requires information on tribend quad for 14, 21 and 28 Mc. Ken 4VM has changed his 4ZD to a 4ZD. 4ZD is still in the air, probably go for a s.a.b. adapter. Chas 4RQ has disposed of his Heathkit and has a Collins KWM running pretty well; heard mostly on 14 Mc. Col 4CQ has his own s.a.b. rig, and is a multiplier, bfo, 4ZD, local converter, everything he can think of. Jim 4PR must be approaching D Day with his s.a.b. compact.

The Northern Command Club held their annual meeting in July, when the Presidents and Secretaries' reports were delivered and the election of office bearers took place. Elected were President Brian 4UW, Secretary, Tony Crane Committee Ian 4ZCI, Colin 4ZBQ and Brian 4ZAP. A pleasant time was enjoyed by all and a 323 rx was auctioned, while a s.a.b. handbook was raffled.

At 9am on the morning of the 21st Monday at Kelvin Grove visitors are welcome to come and also to stay for supper and a rag chew. Major construction work is the installation of a complete 3 m and 5 m station which will take some months yet. Present work is mostly a 10 m air coil for the 14 m tribend antenna installed on 3 and 4 m is in operation. The Club is active on 5 m regularly every Tuesday and on the first Monday meeting night.

Due to the absence of the retiring Hon. Sec. Ray Rumble, the annual meeting of the Southport Radio Club was postponed. Ray's tally got off frequency on the way to the meeting. Ray was uninjured and managed to get the

OBITUARY

JOHN A. LINDSAY, VK1AKE

Many will remember Jack as one of the stalwarts of the 10 metre band in the days following the cessation of hostilities. Unfortunately Jack had for some years not enjoyed the best of health, which resulted in his death in the early part of July.

He leaves a wife and family to whom we extend our sincere condolences.

IVO JOHNSON, VK1EKL

Ivo Johnson ("Johno"), VK1EKL, passed away on 2nd May, 1961, after a short illness.

He was an old Ham and was famous for his machine-like fist on the key. "Johno" took up radio in 1923 and when he joined the Navy, Claude 4ZV, Frank 4FM and Basil 4ZW attended the funeral, which was a large one and well attended by members of the trade houses.

car to limp back to Maroochydore. Notwithstanding this setback, the tape on Communications Interference was played to those present. It proved not only very interesting but also very informative and the opportunity of hearing it was appreciated by all. (Thanks for the prompt release of the tape, Bill.)

A bird by name of Oompah heard that the W. B. & B. monthly meeting was held in Gympie on 18th July and 23 persons were present, including OM, XYL and harmonica. They travelled from as far north as Mandurama and from as far south as Nambour. The meeting covered mostly branch business and the XYLs provided refreshment at the appropriate time. In the afternoon a 144 Mc. hunt, run by Eric 4XR, was won by Ken Chiverton, from Bundaberg. Another 144 Mc. was won by Russell "Ken" Barr 4LN did not enter as he was trying his new mobile rig in readiness for holidays the next day when he was going north for more sun. Half his luck.

Gordon 4QK seen switching up transistor circuits. Jim 4HZ still clinging over the Committee chair for the new year, when he is not watching TV. Hughie 4MK travelled from "Bundy" with XYL and daughter for the meeting, where a pleasant surprise in the presence of their son, Alan, of Brisbane University, who had travelled to Gympie to meet Max and Pa.

Eric 4XR running the A.O.C.P. Class on Thursday evenings attended by four pupils. The class finishes with an excellent supper provided by XYL Jeanette Jean.

Fred Cox 4ZD has disappeared but just can't find time for that ticket; come on Fred! Bill Tomlinson travels from Tewantin every Thursday night to classes—doesn't get home until 1am. You deserve a ticket, Bill! 4ZD has 40W, 4ZB, 4ZD, 4ZV, 4ZL and an 10x10 lower. What about a 144 Mc beam on top, Bill? Vic 4BZ heard to tell he is going on 31 Mc, as there are now five new Amateurs in the town waiting for call signs.

John 4ZB has built another one and heard that Basil 4ZW is running classes to enable chaps to get their licences. Two members of the class sat on Tuesday 18th July, for their limited ticket. No one has passed yet. Two others are not ready. This means in a period of twelve weeks since 4ZB got his ticket there has not been an examination in Cairns until now when we have four chaps sitting in successive examinations. Good work Basil. You are also assisting a high school student, Alan, who has resigned from the Education Department head-teachership at Mt. Garnet, and has bought a small mixed business in Cairns. He won't have much time for radio in the future but any southern Ham mobile in the neighbourhood should look him up.

John 4ZB is leaving Atherton to join a team in Townsville. We hope he will be successful. John 4ZB and Basil 4ZW have a little more success on 8 m. Basil uses a four element beam.

Kingfisher Group — We hope the friendly rivalry which exists between VK4 and VK5 will continue. We all hope that each band will better watch out as summer has just started.

Howard 4WQ, who has had quite a lot of work published, will soon be persuaded to send in new in verse form. (For better or worse.)

Interest in the Group has been sustained,

there being at least six Kingfishers participating each morning, the most consistent being 4OL, 4GG, 2GL, 4WQ, 4WS and 4SA.

Bill 4WS, Alan 4OL and Sam 4SA made a further effort to get QSLs. Del 4BZ, who should be on the air again, Del and his XYL looked over so much better on our last trip. Bill 4WS, as usual, always talks about "front to back ratios"

when passing through Surfers Paradise and there will be no holding him when the bikinis are more plentiful during the summer months.

At 40F, 4K is keen on experimenting and can be depended on to change something either in his mobile or fixed station at least once per week. George 4GG puts out quite a good signal on both his Command and his big rig. George starts us off each morning with the thought for the day "keep the band being live". You should be a better band.

Cross Blood Bank than split all over the road."

Keith 3GJ is trying to get his road fixed up and spends a lot of his time filling potholes with water to bog the Shire Engineer's car Eddie 4ZB has been sick with the "flu" again but is recovering. Bill 4WS is still in the state of health. Bill 4XO comes on when possible. Bill has gone overboard on s.a.b. despite the fact that he has a really f.b. a.m. rig.

Fred 4WB comes on with s.a.b. on his new VK4. Vicroy and his latest transmitters rank with the best we have heard. Get the tape of "Presto" and of course have a look with an serial. Bill 4WD had a visit from Bob 4NG. Bob's photo in "A.R." was a natural. Those of us who know Bob, first looked for the pipe! If you find the pipe just feel along the pipe and if it is hard, then it is a 4NG. George Bill is for his exams in his chosen sphere and is awaiting results. Let us know when you celebrate Bill.

Step Press—VK4WQ takes the air. Wide Bay and Burnett Branch commenced using their call sign on Saturday afternoon. Step Press. Congratulations W.B. & B.

That's all Thanks helpers.—PJ.

TOWNSVILLE

Those lucky enough to read "CQ" for April and May will have received a very good insight into "Sunspot Activity". This is in three parts, the final one being in June. After reading the first two parts you will understand why the square was on the Amateurs to curtail their frequencies. The article points out the various sunspot activity for just over 200 years with a graph towards the future. The graph shows a 11-year cycle, also a graph of 158 years, which is in the throes of being proved, and it does not hold out much hope on the higher bands above 14 Mc. So looks like old chaps can just look back on the past period of the best we have had. I would say another like it and that tall tales shall we tell in another 10 or 15 years to the new-comers?

Yours truly paid a visit to "Uncle Xray" and this was the start of a procession of sellers, who were Basil 4LN and XYL, and 4ZDA Jim 4ZG, followed by old timer Charlie Welch, ex-4CW.

Rumour has it a chap from Ingham sat for the last exam and promises to come up on 1st June. He might sit in Frank 4ZL has activity andadden the hearts of the locals on this hand.

Apparently my remarks in previous notes on time signal cause some fury, as I took the narrow version of "WWV" as "W.W.V." and the tower as "the most informal circles".

Congratulations to our new scribe, 4PJ, in the last two issues of "A.R.". Keep up the good work and boost our "Sunshine" (don't mention the drought). Maybe the "Penay" will wait in fact of such glowing advertisement of our own. Even see Doc 4MD visited the Gold Coast.

Merveilles what one can hear while tuning around the bands. The other day heard one chap moaning about how we get in on the "noise" neck. I asked what was the commercial question from overseas. As an illustration say 8x costing £8.00 in England. It would cost £100 Australian (25% exchange, plus duty 21% (now £117/10/0), plus 30% tariff on the Australian manufacturer. This would not build this class receiver (now £183.00, plus 13% sales tax to help keep the country prosperous, making it just over £172.00. He forgot to mention freight and insurance. It is about time some of the imports were removed. I think the Vanks are right when they say "lobbying". Election is on this year and who knows?

Hope our State does better in the RD. Contest T3, 4RW

SOUTH AUSTRALIA

Once again the monthly general meeting of the VK3 Division was held to a capacity audience. Many standing room only but most admit that early in the year the numbers began to think that for once the attendance was going to be well below standard, because as the meeting was opened by the Chairman, John SJC, there were seats aplenty. I woke up later

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on that the reason for this is that we are starting meetings a quarter of an hour earlier for these days and it will take a little time for that to be noticed.

The meeting took the form of a film evening and without any doubt it was the most enjoyable and instructive night of this nature that we have had. Up until that I think all will agree that the films shown at the S.A.R.A. and at the meetings were the ones chosen by Neil SAWA, but his record was well and truly broken by these films which were chosen, transcribed, set up and projected by Keith SWI. The meeting was a year-round affair with but being too technical easy on the ear and eye, they retained interest throughout, and the vote of thanks to Keith was no doubt in anyone's mind that the night was a huge success.

The full house remained for the business part of the night, much to the Chairman's surprise, and opportunity was taken to introduce the new Secretary. Keith was elected, and I say my hat to the man, to all concerned. I am sure, my hat to the man, after the meeting, I can confidently say that he made a good impression on all present and I think that we are lucky to secure him, although we are also sorry that Brian SCA was forced to withdraw his name. Keith has been looking the part, having served the Division well and faithfully for some time. Little Divisional business came to hand, the main thing was the mentioning of the proposal to establish a new clubroom, and the appointment of Keith SCA to the position of making all the necessary enquiries on the matter. A discussion took place on our new clubrooms, and it would appear that the only objectionable concern was of seating, and the poor occupancy of the rooms, both of which are not unmountable. Federal business brought up the John Moyle Memorial angle, and the idea of a field day seemed unanimous. The question of t.v. fringe and amateur interference was brought up by Pete SFM, is still in the hands of F.E.

Just as the Chairman thought that all business was finished, a handsome, modest and debonair member, who for obvious reasons remained anonymous, rose to his feet and asked that Federal Executive be written to with regard to a privilege that seemed to be granted to VK1 but not to VK3, namely the payment of Radio Amateur licenses at any post office or radio station. A visitor to VK3, J. E. ZAHM, who rose to his feet and said that as far as he was concerned no such privilege existed, and upon the aforementioned handsome, etc., etc., quoting a letter from "A. A." in support of his statement, the visiting VK3 was not at all disconcerted, and replied that the license existed in Sydney or suburbs, to which the handsome, etc., etc., replied that neither did he but now was a good time to find out. Amidst jeers, catcalls, and derisive laughter, to which the handsome, etc., etc., paid not the slightest attention, the Federal Councillor, Les SAX, was instructed to do his duty.

The meeting then closed on a note of hilarity, with the handsome, etc., etc., more than holding his own, at the witching hour of 11.45 p.m., and if by any chance you are not prepared for the rest of this column, you will be prepared for the statement that all members retired to their couch of virtue, well satisfied with the fare provided. Once again I emphasize that this means the fare at the meeting, not the bus, or train, or even the taxi fare to the meeting.

A welcome visitor at the meeting was Tony (ex-G3JKO) and now, all being well, S.H. He is one of the growing number of Gs who come out to our meetings on S.A.R.A. and the VK3 said that at the first opportunity they hurry back for permanent residence. Welcome COM, see you at the next meeting.

Heard "Shep" SDC and Luke SLL in an hour long contact on 7 Mc. the other day. Nothing important in that. Then "Shep" was mobile through the Adelaide hills at the time and it was most interesting to watch the behaviour of his signals as he went up and down and round the corners. He was kicking against the rules, however, because every time he nominated his signal strength as going up or down, he always picked the wrong one.

Always try to listen in to the schedule between Ken SIM and his buddy from VK2 at early evenings. Ken is a good operator plus the rather coarse reactions from the VK3 help me to keep in my normal cheery frame of mind. Joking aside, it is quite entertaining and speaks volumes of the friendship and comradery of Amateur Radio.

Frank SAK VK3's gift to chemists and doctors, is still at the moment of writing, laying in his cosy warm bed on these chilly mornings when we unfortunate fellow Amateurs have to sail off to daily toil. He has been

given a further extension of time off from work, but by the sound of his voice on 7 Mc. is getting a little fed up with it all. You never all get to go home.

It is said that unanswered letters eventually answer themselves, and this truism was demonstrated this week on the W.L.A. call-back. Last month in these notes I referred to the fact that I had not written to Keith SCA and was wondering how he was making out. On Sunday he was bobbed in person and sounded like his old self, although he did say to Keith SWI that he was taking it a bit easy still. Nice work, Buck, good to hear you on the air again.

The DX situation being what it is these days forced me to invent my own method of seeking excitement from my hobby. In the course of writing these notes I have been the recipient of letters, both polite and coarse, from various parts of VK, and I now have a backlog of about 100 letters from all States including VK6 (apparently they are a little harder to need than the wise men from the east). I am now concentrating on DX with these letters and this month I pinned up my best DX card, which came from Charles Theory, a VK6, a well known man from Rockhampton, giving me the details of the E.A.R.S. award as asked for a couple of months ago.

Actually the matter came up when I referred to the fact that Ian SNO had qualified for the award, and Charles tells me that he listened in to the particular contact and has received QSL cards from all three stations concerned. It also enabled him to secure the much coveted E.A.R.S. award. Ian says that if the QSLs are lost, to thank him for the QSL. Tubby SNO, to thank him for the QSL. Charles is apparently a canny bird, because he opens up his letter by saying "If you are serious about wanting to know the full title of the E.A.R.S. award, just give me the rule information at the end of this letter." I'll be serious! Charles, how could you doubt me? Anyway, many thanks for the letter OM, and don't forget that you are the best DX to date!! and polite DX at that.

Taking of the Elizabeth Amateur Radio Club, it is interesting to note that they have enjoyed a satisfactory year, the Elizabeth Award has proved popular, 75 having been issued so far. The QSL Bureau has handled 19,000 cards since its inception, and last but not least the club has conducted a very successful series of last National Field Day. Speaking from my own observations I can safely say that they are the keenest club in my experience, and without mentioning individuals I feel that most of their success is due to the tenacity and faith in the hobby of Amateur Radio displayed by executive and member aliks. The President Tubby SNO and the Hon. Sec. Ron SFT are to be congratulated on their efforts on behalf of some of the few clubs in VK3 that have indeed stood up after a few months feaverish activity.

Tom STL is still conducting his Slow Morse Transmissions on Thursday nights, and if you want any further information as to times and frequencies, contact a member of the club classes; they are finding the transmission very helpful. Incidentally, Tom has overcome the habit of going on the air on Wednesday nights by mistake, he finds that too many of the VK5 boys have a weakness and unwillingness in bringing judging by their remarks to him after being told of this peculiar habit of losing track of a day now and then.

See 5GP (ex-SZB) heard in contact with the above-mentioned forgetful gentleman the other night. The contact turned out to be a pattern of the same. Tom STL, G3JZK, Frank 2ACQ joined in, and also ZNA. Everyone patted everybody on the back, and concluded with three cheers for the Commonwealth Service, and four cheers for themselves. I have a copy of the log of the remaining of the QSO to all four, that they can hear how well the rattle of the tea cups and the pouring out of the tea came over the air. Made the whole contact sound as natural!

Len SZF heard in a hook-up on 80 mc during which a keen discussion took place on the merits and demerits of H.F. re-modulation. The subject was tossed about from one to the other for some time, and culminated in "Shep" SDC telling Len that if he liked to call out to the Baronial Hall of "Shep" he could pick up everything for H.F. re-modulation. Len rejoiced thereon on the part of Len, and he and Carl SSS duly went out and took delivery. Remind me in my next contact with "Shep" to cunningly bring the conversation around to a discussion on 9300 or perhaps a complete Collins setup.

You know, it is possible to be unlucky. I rang Keith SWI up and asked him to put over the session that I had heard that the whole area of Elizabeth, including the Elizabeth Radio Club, had been de-licensed, and I felt that the news was true because I had

received no notes from that direction for three months. Keith did his duty, and as I sat back with a smirk on my face, my better-threethree was still in the air. "Well, I'll tell you what, Petals, there is a letter from Elizabeth for you here. It came yesterday." At the moment I am well under cover, but I cannot dodge her for ever, and judging from the remarks attributed to Tubby SNO after the broadcast, satisfying her will boil in oil will satisfy him. Oh me—oh my!

Len SOC heard calling SWI on Sunday with the usual good signal. Long time no hear this joker. Len was placed on guard duty for it was his first time on the band since the R.D. Contest last year. Looks ominous, does it not? Les SAK heard for the first time since his return from the Apple Island. A real good signal from him although he was complaining of a poor signal.

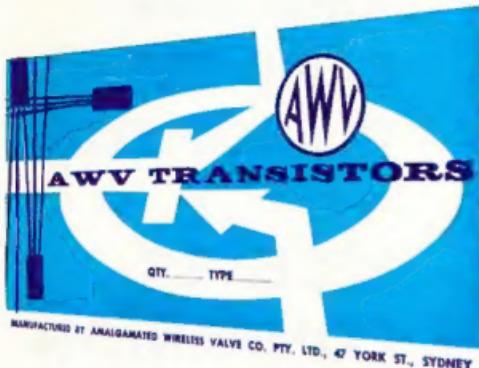
Quite a gathering of the stars on the 80 mc Sunday mornings at the call-back to Reg SRR after his re-broadcast of the SWI session. Among the galaxy noted were George KGD, Carl SSS, Len SAK, Len SZF and Rex EYK. Tom STL was the most distant and at times this time just failed to make the grade. This band is becoming more and more popular and before long we will be complaining of the pile-ups. Incidentally, Reg SRR has been putting in some considerable work on a month of writing it is still in the unfinished stage.

The Elizabeth Amateur Radio Club has its weekly round-up on 80 mc each Monday night at 7.30 p.m. (for the uneducated, 8200 universal time for the phone man!) 1000 Universal time for the radio listener). Indicating the international method of communication; Everybody welcome, and that elusive station for the Elizabeth Award may be on, so join in. In general, SLZ, SNO, SFY, SDY and SEU are on consistently. The 80 mc round-up station at the Elizabeth Birthday Celebrations in November, and further information will be available next month because of pressure of space at the moment. In other words, Ya Editor has the red pencil poised.

At SNQ may be having temporary residence in the city during week days, returning home on the week-ends. To dispel any thoughts that this means more air space, I have been hearing another junior operator from this 80 mc station to the name of Joe. This Joe's voice can often be heard working the DX with Dad's burgundy-like tones in the background, and it would seem that there is no lack of operators from SNQ. Tubby SNO is sporting new antena's. It has been determined to co-axial feed the feeders terminated by an antenna, and drooping very near the clothes hoint. Joyce is still managing to keep her weekly laundry above the whole concoction, despite Tubby's efforts to get the final in the washing machine. Probably after a clean signal, these modern detergents are wonderful! That should make him grow in his beard.

Steve SJA has been playing with antenna, assisted by Peter LSS. However, Steve is putting out a signal on the bands after disguising his voice to sound like Peter's. Didn't trick me, Harry SUE is still chasing these few extra points to get ahead of me, and I have heard that a new 3NO device will shortly grace the SUE back yard, which for every watt that Tubby uses, will rise, like Jack's beanstalk, another three feet in the air. Ian SQR is still a one-man band—plus one—bandwidth is very narrow, one band man to win 15 mcs. The antenna for this band possesses four elements, plus a chimney and a SUE built-in trap, and Ian works the DX according to the direction of the wind. By the results it seems to be good going. Peter SFT is still at the air at the moment for the purpose of re-building. His re-appearance and cheery voice is being awaited with intense eagerness by his myriad of listeners. There is go again, it's the world in me. Don SKD has been trying to remain in Elizabeth, and is working on a mobile rig as the only way to avoid the prevalent congestion in the area. Will your new boat have a built-in rig, Den?

Hugo SAK and Bill SZD set for their e.w. this month and everybody has their singers crooning for them; best of luck, OKs. Don STM is still very quiet on the bands, but a new rig is reported in the offering, complete with hot running maid, and all mod cons. GPE SFY is another quiet one on the air, but we hope that the a.s.b. rig (horrid words) will eventually one of these days. Ron SFY is still trying to keep up with the competition and bobs up now and again. His junior operator, Alan, has now been on 80 mc at times and has succeeded in working enough stations to get the much coveted "Elizabeth Award," of which he is most proud. No doubt about it, they start them young in that area. He is showing any ability in espionage Ron!



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